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ADVISORY COMMITTEE COMMENT FORM
FOR PROPOSED CODE CHANGES
(This form must be submitted electronically)

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1303 - #9

Proposed Code Change - Language

GAS PERMEABLE MATERIAL. "Gas permeable material" means

1. A uniform layer of clean aggregate, a minimum of 4 inches (102 mm) thick. The aggregate shall consist of material that will pass through a 2-inch (51 mm) sieve and be retained by a ¼-inch (6.4 mm) sieve; or
2. A uniform layer of sand (native or fill), a minimum of 4 inches (102 mm) thick, overlain by a ~~layer or strips of geotextile drainage matting designed to allow the lateral flow of soil gases; or~~ soil gas collection mat, soil gas matting, or a soil gas collection mat installed in accordance with the manufacturer's installation instructions.
3. ~~Other materials, systems, or floor designs with the demonstrated capability to permit depressurization under the entire soil membrane.~~

Proposed Code Change – Need and Reason

It is necessary that rules provide sufficient direction for the user of the code. In this case, item 2, which provides one method of installing a gas permeable material, requires a geotextile drainage matting be installed in "a layer or strips" and that it be "designed to allow the lateral flow of soil gases. An Internet search fails to reveal much in the way of "geotextile drainage matting". The text gives no direction on what constitutes "strips". It doesn't say how wide or how frequent they must be. It doesn't say where they must be installed or in what manner. It doesn't say how the user or code enforcement would know if it is "designed to allow…."

The EPA handbook entitled "Build Radon Out" contains the following statement on page 19:

> A. Gas Permeable Layer
>
> Usually a 4-inch layer of clean, coarse gravel is used beneath the slab to allow the soil gas to move freely underneath the house. Other options are to install a loop of perforated pipe or soil gas collection mat (also known as drainage mat or soil gas matting).

The EPA book uses the terms “soil gas collection mat”, “drainage mat”, and “soil gas matting” instead of “geotextile drainage matting”. An Internet search of those terms will result in numerous “hits”.

The proposed amendment inserts the same terms used in the EPA book and requires that the material simply be installed in accordance with the manufacturer’s installation instructions. Users of the material and code enforcement personnel understand what this would mean. Using terms that appear to be common to the industry will make it easier for contractors to locate the proper materials and provide guidance on how they should be installed. At the end of this explanation is a link to the installation instructions for one brand of gas collection mat to give one an idea of the instruction provided. This gives much necessary direction to the installer or code enforcement personnel. It also inserts the same terms in the Minnesota Rules that are used by the EPA.

Additionally, the code should not unnecessarily repeat language throughout the code if it is sufficiently addressed as occurs in item 3. Minnesota Building Code Chapter 1300 (see following) provides for alternate materials and methods of construction and provides the direction necessary to consider those alternates. It is unnecessary to repeatedly state that other methods or designs may be used. Furthermore, it is unclear to me as a building official if the reference to “other materials, systems…” in the draft rule means that I should follow the direction of 1300.0110, subp. 13, or if this is intended to be an exception to 1300.0110, subp. 13, and a different standard of acceptance might apply. It is therefore reasonable to delete this language and to defer to language that is already in the code and familiar to all users of the code.

> ***1300.0110 DUTIES AND POWERS OF BUILDING OFFICIAL.***
> *Subp. 13.* ***Alternative materials, design, and methods of construction and equipment.*** *The code is not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by the code, provided that any alternative has been approved. An alternative material, design, or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety. The details of any action granting approval of an alternate shall be recorded and entered in the files of the Department of Building Safety.*

This proposal is reasonable because it provides necessary direction to users of the code, uses terminology found in published EPA documents, and enables the building official to use language established and understood in Chapter 1300 of the Minnesota Building Code that is commonly used by all designers and code officials.

http://www.radon.biz/soilgascollectormattingpriceperrollcomesin45footrolls.aspx

Placing the Mat

1. Lay out the Soil Gas Collector (SGC) on the sub grade after the final preparation and before the concrete is poured. It is typically laid out in a rectangular loop in the largest area with branches or legs into the smaller areas.

2. Position the "T-Riser" in appropriate location and nail down with a 12-inch spike through hole in center.

3. Slide the SGC into openings in "T-Riser" with a portion of the fabric around the outside. Tape the fabric to the outside of the "T-Riser" with duct tape and staple the SGC to the ground with a landscaping staple near the "T-Riser"

4. Roll out the SGC, smooth it onto the ground. To avoid wrinkles and buckling, work away from the "'T-Riser", stapling it to the ground as you go. The SGC should be stapled to the ground every three to four feet, in addition to the corners, "tee's" and ends.

5. Corners are constructed by peeling back the filter fabric, cutting the two ends of the SGC matrix at 45 angles and butting (or overlap no more than 1\2 inch) the matrix together. Pull the filter fabric back and tape into place. Staple across the joint of the matrix and each leg of the corner. Use a minimum of four staples at each corner - two across the joint and one on each leg.

6. The "tees" for branches or legs are constructed by slitting the fabric of the main loop at the location desired. Cut the fabric of branch at the edges and expose 2 inches of the matrix. Cut off the exposed matrix and butt the matrix of the branch (or overlap no more than 1\2 inch) to the matrix of the main loop. Pull the filter fabric of the branch back over the

main loop and tape into place. Staple across the joint of the matrix with two staples and one each on the branch and the main loop. Use a minimum of four staples at each "tee"- two across the joint and one on each on the loop and branch

7. All openings in the fabric at joints, "tee's and ends of the branches should be taped to keep out the concrete.

8. When the building is ready for the soil gas vent pipe to be installed, the top of the "T-Riser" is cut off and a four-inch pipe is inserted, caulked with polyurethane and secured with screws. The vent pipe should be labeled to avoid confusion with the plumbing pipes.

Note: The openings in the riser are laid out at 180 to accommodate straight runs of the SGC only. If the riser is to be located in a corner, which is Not uncommon, the front of the "tee" can be cut off and the SGC inserted into the new opening. The side of the "tee" which will not be used should be sealed with duct tape. This creates a "90 tee" which will allow the riser to be placed in a corner with either end of the SGC loop running into the "tee" at a 90 angle.

Pouring Concrete:

The filter fabric that comes sewn around the soil gas collector prevents the wet concrete from entering the mat and reducing its air collection capacity. The only precaution that needs to be taken is that the fabric is duct tape closed at seams of splices and corners sufficiently to keep the uncured concrete from entering.

The mat also needs to be secured to the soil with landscape staples to prevent the concrete from lifting it off the soil while it is being applied. Reinforcing bars and wire can be laid right on top of the mat.

Note that the mat is strong enough to withstand concrete workers and their wheelbarrows as they cross over it during the course of installing the slab.

Riser has special hole and spike for securing it in place.

Making Corners and Splices

The mat should be routed around the inside perimeter of the foundation. This will require an occasional corner. Furthermore, splices will have to be made to join two lengths of mat together. Corners and splices are very easy to make, and do not require any special fittings. Cut back the filter fabric to expose the core material. In the case of a splice merely overlap the core by at least one corrugation replace the cloth and tape it. Use two landscape staples to hold the splice in place. In the case of a corner slice the core of two adjoining legs of the mat at 45-degree angles, overlap the edges by one corrugation, tape the cloth and landscape staple together. The corner is illustrated below:

Cut back the cloth. Cut the core at a 45 degree angle. Overlap corrugations

Replace filter cloth. Duct tape edges to keep out concrete. Staple in place.

Connecting The Mat To The Riser

A convenient riser with a dual entry allows for either end of the loop of mat to be secured to the soil gas vent riser.

Slide the mat into either end of the riser and tape the edge to prevent wet concrete from entering.

The riser comes with a molded cap to keep out concrete Later this cap can be cut off and the 4" Sch. 40 PVC riser can be inserted, screwed and caulked into place

Risers are often placed in corners for convenience of later pipe routing. The plastic riser "tee" can be cut to allow for such situations.

Proposed Code Change – Cost/Benefit Analysis

This proposal will have no impact on the cost of construction.

Other Factors to Consider Related to Proposed Code Change

1. Is this proposed code change meant to:

☐ change language contained in a published code book? If so, list section(s).

☑ change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).
Radon rules, definitions

☐ delete language contained in a published code book? If so, list section(s).

☐ delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

☐ neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.
No

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
No

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.
No

5. Who are the parties affected or segments of industry affected by this proposed code change?
Code officials, building designers, contractors, building owners

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.
No

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.
No